Homework 10: For Loops

CS 1323 Fall 2023

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1. (12 points; 3 points each part) Trace the for loops below in the tables to the right. If the loop is an infinite loop, trace at least three iterations and write infinite loop.

```
a)
int accumulator = 0;
for (int count = 5; count < 9; ++count)
{
         accumulator = accumulator + count;
}</pre>
```

accumulator	count
0	5
5	6
11	7
18	8
26	

```
b)
int sum = 80;
for (int count = 0; sum / 2 < 5; ++count)
{
         count = count + 1;
         sum = sum + count;
}</pre>
```

sum	count
80	0
	1

```
c)
int points = 1;
for (int count = 1; points >= 0; count -= 2) // read carefully
{
     count = count + 2;
     points = points * count;
}
```

count	points			
1	1			
3	3			
3	9			
3	27			
3	81			
3	243			
3	729			
3	2187			
3	6561			
3	19683			
3	59049			
3	177147			

```
d)
String name = "SleepySunday";
String result = "";
for (int index = 2; index < name.length(); ++index)
{
    result = result + name.charAt(index) + name.charAt(index - 2);
    ++index;
}</pre>
```

result	index
	2
eS	3
eSpe	5
eSpeSp	7
eSpeSpnS	9
eSpeSpnSan	11

```
2. (8 points; 4 points each)
   a) Translate the method below to use a while loop instead of a for loop.
public static String deleteCharacters(String source, int from, int to)
       String result = "";
      for (int index = 0; index < source.length(); ++index)</pre>
              char next = source.charAt(index);
              // Only add the characters that are not between
              // from (inclusive) and to (exclusive)
              if (index < from || index >= to)
                     result = result + next;
       }
       return result;
}
public static String deleteCharacters(String source, int from, int to)
  String result = "";
  int index = 0;
  while(index < source.length()) {
  char next = source.charAt(index);
  if (index < from || index >= to)
   result = result + next;
  index++;
 return result;
```

b) Rewrite the method below so the while loop is replaced by a for loop. The initialization, test, and increment in the for loop must be non-empty.

```
public static String subString(String source, int from, int to)
{
    String result = "";
    int index = from;
    while (index < to)
    {
        char letter = source.charAt(index);
        result = result + letter;
        index = index + 1;
    }
    return result;
}</pre>
```

```
public static String subString2(String source, int from, int to)

{
String result = "";

for (int index = from; index < to; ++index)
{
    char letter = source.charAt(index);
    result += letter;
}

return result;
}
```